Heterogeneous preferences with respect to food preparation time: Foodies and quickies

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Abstract

Time scarcity is an important driver for food choices. Despite this, little research has been conducted on the preferences of consumers and their willingness to pay for reduced food preparation times. We have explored consumer preferences with respect to saving time in cooking, using a payment card technique with an online survey on a sample of German (486 in number) and Italian (494) consumers. Our findings differ from those of other studies on the same context of daily duties, such as commuting, which note a general willingness to pay for time-saving. Indeed, latent class analysis shows three segments: the 'quickies', who are willing to pay a premium for saving time; the 'foodies', who receive utility in cooking; and the 'indifferent', for whom the time needed to prepare meals is not a choice factor. Profiling within our sample indicates that Italians, young people, and large families show a higher willingness to pay for saving time in cooking. Consumer heterogeneity calls on convenience food producers for targeted marketing strategies to create value, from product development to communication and distribution.

Keywords: Convenience foods; Latent class regression; Payment card; Ready-to-eat foods; Time-saving; Cooking time.

Highlights

• We investigate consumer preferences and WTP for saving time in food preparation.

• We detect a strong heterogeneity in preferences for time-saving in cooking.

• A segment (quickies) is willing to pay a premium in order to save time in cooking.

• Italians, young people and large families prevail among quickies.

• Opposite preferences for time-saving in cooking calls for targeted marketing strategies.

1. Introduction

Time affects most aspects of our lives and has been operationalized in various ways by researchers in different fields (Jacoby, Szybillo, & Berning, 1976). In his theory of 'human capital', Becker (1965) includes time as a resource existing in a limited and finite quantity that can be allocated to activities that generate satisfaction, or traded for other resources such as money. In the labour market, people can sell their time for money, while in the goods market, people can be viewed as buyers of free time when they purchase time-saving products or services (Sheely, 2008). The activities that generate satisfaction are likely to differ among individuals and across contexts; some may be willing to pay to do something that others would pay to avoid. Food preparation is likely one such activity, as food preparation can be a duty or a leisure activity. In the post-modern society, time is becoming more and more scarce, due to changes in cultural, economic, and socio-demographic factors (Gross & Sheth, 1989; Zuzanek, Beckers, & Peters, 1998). This evidence determines the growing demand for goods and services that enable saving time in unsatisfactory tasks in favour of more enjoyable activities.

Concerning food consumption, Davis (2014) shows that time spent on food production at home decreases when the opportunity cost of time rises. The majority of studies affirms that the increased participation of women in the workforce is one of the central determinants of time's increased opportunity cost and hence contributes to the need for food products with reduced preparation time (Buckley, Cowan, & McCarthy, 2007a; Davis, 2014; Möser, 2010; Traill, 1997). Other determinants are identified in changes in lifestyles, such as the deconstruction of family meals and the growing importance of leisure activities (Brunner, Van der Horst, & Siegrist, 2010; Buckley, Cowan, & McCarthy, 2007b; de Boer, McCarthy, Cowan, & Ryan, 2004). All these factors result in the increased consumption of convenience foods (Hamermesh, 2007; Jabs & Devine, 2006; Park & Capps, 1997; Sheely, 2008).

Convenience foods are defined as cooked or partially processed foods that offer consumers a set of services aimed at facilitating food-related activities, including purchasing, cooking and

cleaning up (Brunner et al., 2010)[1]. These services range from saving time, to avoiding unpleasant activities, and reducing effort. Saving time in cooking is the main advantage that convenience foods provide (Jabs & Devine, 2006). This advantage can have different degrees of relevance, varying from foods that are only cut and washed to ready-to-eat foods.

Over the last decades, many consumers have been transformed from consumers that produce, i.e. prosumers (Toffler, 1980; Troye, Supphellen, & Jakubanecs, 2012), into convenient consumers (Olsen, Prebensen, & Larsen, 2009), as convenience foods have replaced homemade foods in many households. In this framework, convenience has become an important food choice attribute (Berry, Seiders, & Grewal, 2002; Davis & Serrano, 2016; Grunert, 2006; Lusk & Briggeman, 2009).

Several studies have analysed the convenience foods market, identifying large segments with a high propensity for consuming convenience foods (Buckley, Cowan, McCarthy, & O'Sullivan, 2005; Casini, Contini, Marone, & Romano, 2013; Daniels, Glorieux, Minnen, van Tienoven, & Weenas, 2015; Olsen et al., 2009). These studies have utilised various segmentation factors of the convenience orientation. A rich vein of research has concerned segmentation with respect to lifestyle, as for example in food shopping and preparation (Buckley et al., 2007b; Olsen et al., 2009), time spent in food-related activities (Daniels et al., 2015) or consumer eating and purchasing habits (Bernués, Ripoll, & Panea, 2012; Shiu, Dawson, & Marshall, 2004). The results show that convenience-oriented consumers dislike food shopping, display less enjoyment in meal preparation, have fewer cooking skills, are accustomed to eating alone, and breaking down meals.

As far as socio-demographic characteristics are concerned, it has emerged that the consumers with a more pronounced convenience orientation are young people (Bernués et al., 2012; Brunner et al., 2010), single males (Olsen et al., 2009), people with a higher level of education (Daniels et al., 2015), and couples among whom the meal-preparer works outside the home (Candel, 2001; Chetthamrongchai & Davies, 2000). Furthermore, according to Shiu et al. (2004), the effect of children on the propensity to consume convenience foods depends on the family

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[1] Based on this definition, Brunner et al. (2010) identify various convenience foods covering the full range of products sold in the supermarkets and classify them into four groups: highly processed, moderately processed, single components, salads (green salad, fruit salad, and other ready salad, e.g. celery, potatoes, beans, seafood, pasta).

context. In families with two adults, having children is negatively associated with a convenience orientation, while in single-parent households, having children gives a higher propensity to consume convenience foods.

Moreover, Swoboda and Morschett (2001) show that convenience-oriented consumers are low price-sensitive. However, none of the studies cited here have estimated the willingness to pay (WTP) for the convenience attribute. In particular, as far as we know, no studies have investigated the time-saving dimension of convenience foods, or segmented consumers based on their food preparation time preferences.

The objective of this paper is to understand the preferences of consumers with respect to food preparation time and to estimate their WTP for saving time in cooking. To investigate this issue, we conducted an online survey in which respondents were asked to evaluate otherwise identical food products with different preparation times. We used latent class regression modelling to explore the degree to which food preparation time preferences are heterogeneous. Finally, the identified segments were profiled according to the main socio-demographic features.

2. Review of the literature on the value of time

Two time issues are important for food researchers. One refers to the value people place on their time, which has received very little attention in the food literature. The second issue concerns intertemporal choices and the effect of individual discount rates on healthy or environmentally-friendly food behaviours (De Marchi, Caputo, Nayga, & Banterle, 2016; Lawless, Drichoutis, & Nayga, 2013). In this article, we focus on the former issue.

The famous saying 'time is money' refers to the fact that time is a limited and finite resource that can be exchanged for money (Becker, 1965). According to economic theory, rational individuals should allocate their time between work and leisure so that their marginal value of leisure time is equal to their wage rate.

DeSerpa (1971) developed a theory of the economics of time, pointing out that the individual time endowment is the sum of time spent at work and time spent in other daily activities. Some of these activities are necessary/unavoidable for consuming (i.e. meals preparation) or producing (i.e. transportation to and from work). Therefore, time required for these activities is an

additional technical constraint in the problem of utility maximization. In this sense, the value of time-saving is the consumer's extra utility to relax this constraint. In this framework, food preparation is a necessary activity for consuming food at home, and the time spent on it affects the consumer's utility. Therefore, preparation time should be part of the utility optimization when consumers choose food products.

Studies on the value of time have primarily been conducted in transportation, where WTP for time-saving is relevant when evaluating infrastructure projects and policies (e.g., Brownstone, Ghosh, Golob, Kazimi, & Van Amelsfort, 2003; Brownstone & Small, 2005). Reviewing the research on this topic, Small (2012) notes a general WTP for reducing travel time. However, several empirical studies find differences in the value placed on time-saving for transportation based on travel purpose (Abrantes & Wardman, 2011; Ho, Mulley, Shiftan, & Hensher, 2016; Mackie, Jara-Díaz, & Fowkes, 2001; Shires & de Jong, 2009). In particular, those who travel to visit friends, engage in hobbies, shopping, or going on holiday place a lower value on saving time compared with when they travel to commute or for business (Mackie et al., 2001; Steimetz & Browstone, 2005). Paleti, Vovsha, Givon, and Birotker (2015) stress that differences in WTP to save travel time depend on whether the activities are mandatory. In general, if a given activity is mandatory, WTP to save time is much greater. For example, consumers show a considerable WTP to save time with mandatory shopping but not when the shopping is not mandatory (Paleti et al., 2015). Many people can see meal preparation as a mandatory daily routine, resulting in a WTP to save food preparation time, while others do not.

Results from transportation studies highlight an overall WTP for time-saving, but they also point out variability in time valuation that may be extended to food preparation. Travel time may be associated with something negative when driving to work, and something positive when out for a leisurely ride. Furthermore, some people enjoy driving while others just want to get to their destination. Similarities can be expected in the food setting; some people enjoy cooking, while others only want to get to their destination, namely the prepared meal. Therefore, studies identifying consumer preference heterogeneity are necessary to improve our understanding of food preparation time value.

3. Data and methods

We conducted an online survey in Italy and Germany in September 2015. The survey was carried out by an international marketing research company (Toluna USA Inc.)[2] using their online panels. Online panels have several advantages that include a broad geographical coverage and cost-effective response rates.

3.1. Payment card

We have surveyed the WTP for time-saving in cooking, using a payment card (PC) format (Mitchell & Carson, 1981, 1989) with 11 prices for each preparation time (5, 10, 20, or 30 minutes) of the three selected foods. To allow respondents to think about buying a dinner suited for their household, the prices were per portion. The prices were in €1.00 intervals from €0.00 to €10.00 and the list was identical for each of four time alternatives. This price range is consistent with what is charged for similar convenience foods in Germany and Italy. After framing the question as a midweek shopping trip with four possible foods, we asked respondents to tick one price per time alternative (Fig. 1).

The choice of the payment card format was based on three considerations: (i) we wanted to focus on the value of one food attribute: preparation time; (ii) we wanted a response format that was easy to understand; and (iii) we wanted individual WTP responses so that we could explore the background for variation in WTP patterns. The PC approach fulfils all three requirements, and has previously been used to elicit WTP for food. For instance, the PC has been applied for estimating the WTP for blueberry products (Hu, Woods, Bastin, Cox, & You, 2011), fair trade coffee (Yang, Qing, Hu, & Liu, 2013), non-biotech foods (Moon & Balasubramanian, 2003), organic tomatoes (Alphonce & Alfnes, 2017) and 'green food' (Yu, Gao, & Zeng, 2014).

3.2. The questionnaire

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[2] Toluna USA Inc. disposes of an international panel that includes 222,000 Italians and 549,500 Germans. The panel is distributed over the entire national territory (Italy: 43% Northern, 19% Central and 38% Southern and Islands; Germany: Eastern 27%, Central 13%, Northern 16%, Southern 21%, Western 23%).

We designed the questionnaire based on a pretest among university students prior to data collection. The questionnaire included three sections. (1) A screening to determine whether the respondent had prepared or eaten the foods selected for our study during the last 12 months. (2) PC questions used to evaluate the preferences for food preparation time, which we will explain in greater detail below. PC exercise was performed only for those foods with a positive response in the previous part. In the event that a respondent chose the zero-value option for a product, we asked them to explain the reason for their choice using a multiple choice question with the response options '*the preparation time is too long*', '*the preparation time makes me think that the product does not taste good*', '*the preparation time makes me think that the product is unhealthy*', '*I don't buy precooked products*', '*I don't purchase processed or partially processed products*', and '*Other*'. (3) Respondent background information included gender, age, education, area of residence (urban or rural area), country of residence, number of household members, and presence of children under 12 years of age in the household. Finally, we surveyed the attitude towards convenience foods, utilising the "freshness" dimension of the food-related lifestyle instrument, introduced for the first time by Brunsø and Grunert (1995). This construct is formed by three items that are measured on a 7-point Likert scale: (i) I prefer fresh products to canned or frozen products; (ii) I think it is important that food is fresh; (iii) I like to buy fresh meat and vegetables, not those that are packed and processed in advance.

The foods evaluated in this study are vegetable soup, pan-fried chicken and mashed potatoes that required varying preparation time. The foods were chosen because they are available on the market with a wide range of preparation times in both countries. Moreover, all these dishes prepared from scratch have comparable preparation times. We included four types of the convenience version that would be ready in 5, 10, 20, or 30 minutes. We asked respondents to '*Imagine being in your usual shop to buy a* [vegetable soup or pan-fried chicken or mashed potatoes] *for a midweek meal. Four products are available and they differ only in preparation time. Assuming that the four products have the same quality, please indicate the maximum price you would be willing to pay for a portion of them*.'

It is worth noting that these foods did not have any welfare, environmental, or origin attributes, which are often shown to elicit unreasonable high WTP values on surveys, due to a

combination of social desirability and hypothetical bias (Chang, Lusk, & Norwood, 2009; Levitt & List, 2007).

3.3. Sample

We collected 980 valid questionnaires of which 486 from Germany and 494 from Italy. Each respondent was requested to fill in the PC only for those foods that he/she had eaten or prepared at least once during the previous 12 months. We obtained three subsamples consisting in 867 individuals for vegetable soup; 740 individuals for pan-fried chicken, and 897 individuals for mashed potatoes.

The sample has acceptable variance in socio-demographic characteristics across both countries; however, as is often seen in such online panels, there were too few respondents in the older and less-educated ranks. The sample composition is presented in Table 1.

3.4. Latent class regression

To identify different consumer segments, we estimated a latent class regression (LCR) model (Magidson & Vermunt, 2002) using the statistical software Latent Gold Choice 5.1 (Statistical Innovation Inc.). LCR allows the simultaneous estimation of class membership probability for each individual and the class-specific regression coefficients in a single likelihood function. The LCR model is a nonparametric random-effects model (Agresti, 2002; Skrondal & Rabe-Hesketh, 2004; Vermunt & Van Dijk, 2001) and can be written as:

$$f\left(WTP_{im} \mid t_i\right) = \sum_{c=1}^{C} P(c) \prod_{m=1}^{M} f\left(WTP_{im} \mid c, t_{im}\right) \tag{1}$$

where $f(WTP_i \mid t_i)$ is the probability density for the i-th consumer, corresponding to a particular WTP_i given the predictor time for food preparation, t_i; c is the nominal latent variable that defines the C latent classes, and m is the number of replications for each consumer; $P(c)$ represents segment membership probability, i.e. the likelihood of finding an individual in segment C, and $f(WTP_{im} \mid c, t_{im})$ are the conditional densities with the same form for each m, given c and the predictor t_{im} (Magidson & Vermunt, 2002).

This model outperforms traditional clustering techniques, as it is based on a probability model and allows the use of statistical indicators, such as Bayesian information criterion (BIC) and Akaike information criterion (AIC), to guide the choice of the number of classes (Magidson & Vermunt, 2002; Yang, 2006). This model has already been applied in several economic studies (examples of recent studies are Contini, Romano, Scozzafava, Boncinelli, & Casini, 2015; Cuaresma, Grün, Hofmarcher, Humer, & Moser, 2016; Lankia, Neuvonen, Pouta, & Sievänen, 2014; Thiene, Galletto, Scarpa, & Boatto, 2013; Zahabi, Miranda-Moreno, Patterson, & Barla, 2015).

In our study, WTP for the foods is likely influenced by two main factors: (i) how much the participants like the products, and (ii) their preferences for food preparation time. To conduct the LCR segmentation solely on time-saving preferences, we normalised WTP for each product at the individual level by the following rule:

$$\Delta WTP_{im} = MWTP_{im} - \frac{\sum_{m=1}^{4} MWTP_{im}}{4} \tag{2}$$

where $MWTP_{im}$ is the elicited WTP by the i-th individual for the m-th measurement, and ΔWTP_{im} is the normalised-WTP, obtained by subtracting the individual average value of the WTP for each of the three foods from the WTPs elicited for each preparation time.

Finally, we estimated the following model for each selected food:

$$\Delta WTP_{im} = \alpha_c + \gamma_{1c}t5_{im} + \gamma_{2c}t10_{im} + \gamma_{3c}t20_{im} + \gamma_{4c}t30_{im} + \varepsilon_{im} \quad \text{for } c = 1,\dots,C; m = 1,\dots,4 \tag{3}$$

where α_c is the class-specific grand mean of the dependent variable; $t5$, $t10$, $t20$, and $t30$ are effect-coded dummy variables representing the foods ready in 5, 10, 20, and 30 minutes, respectively; ε is the error term and γ_1, γ_2, γ_3 and γ_4 are the class-specific coefficients representing the difference in WTP estimated for each c-th class compared with the average value of the WTP for the four preparation times, where C is the number of chosen classes. With Equation 3, we regress the normalised-WTP with respect to the four preparation times presented in the experiment. Thus, the γ values express the deviation from the average WTP, owing to the different preparation times, e.g. a γ of a positive sign for a short time expresses the willingness to pay to reduce preparation times with respect to the average WTP of that product.

4. Results

Table 2 shows the descriptive statistics for the PC values of the three sub-samples. The WTP for saving time in food preparation does not show relevant differences, be it for mean and median values. However, the standard deviations are high, suggesting the presence of a relevant heterogeneity in consumer preferences. In fact, the paired Kolmogorov–Smirnov test for equality of distribution functions between the four preparation times of the three foods shows a significant difference at 1% for each test (Table 3).

Let us underline that generally speaking, we found a positive willingness to pay for almost all of the products. In fact, the rates of consumers unwilling to purchase are, on the average, 9% of the sample, with higher values for longer times (Table 4). Among the causes for not purchasing, the principal reason is the excessively long preparation time, while those who do not purchase the products because they deliver negatively in terms of taste or quality amount to no more than 4% (Table 4).

4.1. Latent class estimation results

To investigate the potential heterogeneity of preferences for saving time, a latent class regression was applied. The selection of the optimal number of latent classes was performed through an analysis of BIC, AIC (Table 5), the significance and the meaningfulness of the parameter estimates (Scarpa & Thiene, 2005). Although BIC and AIC constantly decrease for all three products, the most significant improvements are recorded in the passage from two- to three-class models. Furthermore, bearing in mind that the three-class models present significant parameters and with coherent signs in the clusters, we have chosen this model as the one with the greatest illustrative capabilities for all three products.

Estimated coefficients for the three-class models are reported in Table 6. They represent the differential values of the WTP attributable to the four preparation times relative to the average elicited WTP for each class. The intercept is omitted since it is equal to zero for each class due to the normalization of the WTP variables.

The three consumer segments are labelled 'foodies', 'quickies', and 'indifferent', according to their preferences for time-saving. The 'foodies' range from 33% (mashed potatoes) to 42% (pan-fried chicken) of the sample. This segment prefers longer preparation times, showing rising parameters going from the shortest time (5 minutes) to longer times (20-30 minutes). The parameters for 30 minutes are the highest for all three foods. They are significant and range from 0.30 for mashed potatoes to 0.58 for vegetable soup. This segment's WTP increases for longer preparation times, showing a disutility for time-saving in cooking.

The 'quickies' have a class size between 36% (pan-fried chicken) and 41% (mashed potatoes). This segment shows higher parameters for shorter times. The parameters for 5 minutes are the highest for all the three foods. They are significant and range from 0.83 for mashed potatoes to 0.97 for pan-fried chicken. The segment is willing to pay for reducing the time dedicated to food preparation.

Finally, the 'indifferent' have preparation time parameters for the three tested products, γ, all equal to zero. For these indifferent consumers, the time needed to prepare their meals is not an attribute that influences their valuation.

The estimated WTP for a portion of the three foods for each cluster and preparation time is illustrated in Fig. 2. It worth noting that we found a similar preference structure in terms of segments identified, magnitude and significance of the parameters, as well as of class consistency, for all three products. This evidence seems to demonstrate that consumer preferences for time spent in cooking are similar, at least for foods that have comparable characteristics in terms of preparation time and price.

4.2. Profiling time-saver consumers

We performed further analysis to detect the psychographic and socio-demographic characteristics of consumers preferring food with shorter preparation time. Towards this end, we selected consumers belonging to the cluster of 'quickies' for each food they evaluated in the PC experiment. Overall, 29% of participants presented this feature, and we will refer to this group as 'real quickies'.

Using chi-squared automatic interaction detection (CHAID) analysis (Kass, 1980), we tested for differences between 'real quickies' and the remaining sample by attitude towards convenience

foods; gender, age; education; country of residence (Germany or Italy); area of residence (urban or rural area); number of household members; presence in the household of children under 12 years of age. We find that there are not significant differences between the 'real quickies' and the remaining sample as far as attitude towards convenience foods (prob. = 0.90) is concerned. As for socio-demographic characteristics, country of residence and age, statistically significant differences instead emerged (Table 7). The test statistics indicate that number of household members is at the margin of statistical significance (prob. = 0.06), and area of residence falls just short of statistical significance (prob. = 0.16). Instead, the other variables are not significantly different. The CHAID analysis shows that consumers who attribute more value to shorter preparation time are people under 55 years of age, and are people living in large households (with 5 or more members) (Fig. 3). Moreover, Italians show greater preference for saving time in cooking than Germans.

5. Discussion and conclusion

With the increased popularity of convenience foods, preparation time has become an important choice attribute for consumers. Our study is a first attempt to examine how consumers value time-saving in food preparation. In fact, the studies that have previously assessed the WTP for the convenience attribute have considered the consumer's preference with respect to several preparation formats that facilitate food preparation, such as pre-shucked, half-opened in the case of shellfish (Carlucci, Devitiis, Nardone, & Santeramo, 2017; Loose, Peschel, & Grebitus, 2013) or fresh, cut and packed, cut and packed with dressing, in the case of vegetables (Baselice, Colantuoni, Lass, Nardone, & Stasi, 2017). These studies, however, did not consider the preference for the preparation time of foods. An explorative analysis on preparation time was performed by Heide and Olsen (2017), which by means of a conjoint analysis on a sample of consumers of codfish analysed the importance of the convenience attribute, declining it on three levels: ready in 15 minutes, quick and easy, and skinned and boneless. The authors, however, stopped at assessing the consumer's parth-worth utility for this attribute, not having included the price attribute. In general, previous studies on WTP for time-saving have primarily been conducted in transportation economics, and indicate that consumers have a positive WTP for time-saving (Small, 2012), especially concerning mandatory daily tasks (Paleti et al., 2015).

Our study is a good example of the 'Simpson's Paradox', i.e. a trend can be (in)significant for aggregated data but can appear the opposite when data are partitioned (Blyth, 1972; Simpson, 1951). In fact, considering the data as a whole, the average WTP does not show any preference for reduced preparation time for foods. However, a segmentation analysis indicates a more heterogeneous preference structure than what is reported in transportation studies. Indeed, we find three segments, one of which is consistent with most transportation studies, showing a WTP to save time in food preparation activities ('quickies'). A second segment, instead, includes consumers willing to pay more for the alternative with a longer preparation time ('foodies'). Finally, about one-fourth of consumers are indifferent, meaning that time does not influence their valuation. These findings highlight the different preferences in food preparation compared to transport preferences, notwithstanding the same context of daily duties. Our study has pointed out a structure of preferences for time-saving that is essentially homogeneous for the three foods examined. Several modest differences can be observed in the class sizes, while the parameters present substantial uniformity for all three products, highlighting a homogeneous behaviour about time-saving for each category of products.

Looking at the post-estimation segmentation analysis, we profile 'real quickies', i.e. the individuals that are classified as 'quickies' for all the foods. The profile indicates that Italians are more willing to pay to save time than Germans. This behaviour could be explained with differences in leisure time availability and food-related lifestyles (Grunert, Brunsø, Bredahl, & Bech, 2001; Verbakel, 2013). Moreover, the results show that people under 55 years of age had a higher preference for food with a shorter preparation time. This is in line with previous studies (Bernués et al., 2012; Brunner et al., 2010; Chetthamrongchai & Davies, 2000) that found the most convenience-oriented consumers are young people. One explanation of this trend could be ascribed to the generation effect (Brunner et al., 2010): older consumers are more used to cook because, when they were young, a wide range of convenience foods was not available at grocery stores. An additional factor that could contribute to this behaviour is that retired people have more time to prepare food and, consequently, they are less interested in saving time in cooking.

Finally, 'real quickies' include larger households, which is in line with the results of Candel (2001), which showed a positive relation between convenience orientation and role overload. Indeed, household size increases family duties and thus reduces time availability. Our findings

show some differences with respect to the literature on convenience foods. In the present study, consumers preferring shorter preparation time do not differ from the remaining sample by gender, education, absence of children and being single. Instead, previous studies on convenience foods profiled convenience-oriented people as male (Brunner et al., 2010; Contini, Romano, Scozzafava, & Casini, 2016), single (Candel, 2001; Daniels et al. 2015; Olsen et al., 2009), without children (Buckley et al., 2007a; Candel, 2001; Shiu et al., 2004) and with higher education levels (Bernués et al., 2012; Daniels et al. 2015). These apparent discrepancies can be traced to the complexity of convenience foods, which save not only time but effort as well, by providing services in all the food-related activities that include purchasing, transporting, and cleaning up. Moreover, convenience foods compensate for a lack of cooking skills (Contini, Boncinelli, Gerini, Scozzafava, & Casini, 2018). Hence, it is unsurprising that our findings focusing solely on the preparation time reveal different results. This difference between convenience orientation and preferences for preparation time might be important for food producers when deciding on the preparation time for new convenience food products. For products targeting segments that are high on the convenience orientation, but do not belong to the 'quickies' segment, other convenience factors might be more important than short preparation time.

The main limit of our study is its hypothetical nature. Food choice is a complex task that involves many product attributes that may interact. We built our experiment with the aim of isolating the role of time-saving but the respondent, due to their impossibility to see and try the product, might have inferred on other characteristics of the foods, such as naturalness or taste. We sought to reduce this potential bias to the minimum by devoting particular attention to formulating the questionnaire, underlining that the products are of the same quality, independently of their preparation time. Furthermore, we surveyed the respondents' attitude about freshness in order to point out possible prejudice towards convenience foods. Finally, an a posteriori verification was conducted on the rates of non acceptance (zero-WTP), and the relative motivations were surveyed. The results obtained seem to confirm the validity of the procedure followed. Indeed, the attitude towards convenience foods does not differ between the real quickies and the remaining sample, thus showing that the willingness to pay is not significantly influenced by attitude. The rate of individuals that elicited zero-WTP came out, on the average, at 9% with the maximum values concentrated on the longer preparation time. Furthermore, analysing the motivations of respondents

who indicated zero-WTP displayed the clean prevalence of the "excessively long preparation time" motive. There thus seem to be no relevant criticalities tied to the negative evaluation of quality for the products with reduced preparation times.

In conclusion, our analysis shows the presence of two principal segments of similar dimensions but with very different behaviours with respect to time-saving in cooking, and a third sector, smaller but significant, whose members are indifferent. We feel these findings can offer significant information on the relationship between food preparation time and consumer preferences, which can therefore be used to create new opportunities in developing food products. Our paper can also constitute the basis of further researches. In particular, sensory experiments combined with WTP evaluation methods might provide substantial improvements in understanding consumer behaviour. This approach could clarify the relationships among the food attributes and their specific role in food choice. The information would contribute to the development of better marketing strategies for convenience foods.

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Table 1

Socio-demographic data of the German and Italian sample and national populations – percentage data on a number of observations of 980 individuals.

Variable	Germany		Italy		Overall sample
	Sample (486 obs.)	National population	Sample (494 obs.)	National population	(980 obs.)
Gender					
Male	50.00	49.00	48.00	48.00	49.00
Female	50.00	51.00	52.00	52.00	51.00
Age					
18–34 years	31.07	23.95	29.15	21.89	30.10
35–54 years	45.27	38.00	48.79	41.05	47.04
55–80 years	23.66	38.05	22.06	37.06	22.86
Area of residence					
Urban area	78.40	77.60	90.89	81.10	84.69
Rural area	21.60	22.40	9.11	18.90	15.31
Presence of children					
Households without children	79.42	77.90	68.22	70.10	73.78
Households with children	20.58	22.10	31.78	29.90	26.22
Education[a]					
Individuals without an academic degree	71.81	71.70	65.18	82.30	68.49
Individuals with an academic degree	28.19	28.30	34.82	17.70	31.51
Number of household members					
Single-member households	25.51	16.58	8.91	9.59	17.14
Households with 2 members	40.12	31.29	20.65	20.87	30.31
Households with 3 members	16.05	20.12	30.36	24.95	23.27
Households with 4 members	11.32	21.24	28.95	29.23	20.20
Households with at least 5 members	7.00	10.78	11.13	15.36	9.08

Note: obs: observations. Data for Italian and German population retrieved by Eurostat database. [a]data for Italian and German population are the percentage of population aged 25-64 with tertiary education.

Table 2
Descriptive statistics of WTP for Vegetable soup, Pan-fried chicken and Mashed potatoes by alternative preparation times.

| | Preparation time | | | | |
	5 minutes	10 minutes	20 minutes	30 minutes	Overall sample
Vegetable soup					
Mean	2.56	2.50	2.46	2.41	2.48
St dev	1.91	1.63	1.75	2.00	1.51
Median	2	2	2	2	2
% indifferent[a]					25.03
Pan-fried chicken					
Mean	3.36	3.41	3.22	3.14	3.28
St dev	2.05	1.82	1.87	2.16	1.66
Median	3	3	3	3	3
% indifferent[a]					21.76
Mashed potato					
Mean	2.31	2.29	2.03	1.93	2.14
St dev	1.81	1.71	1.67	1.89	1.49
Median	2	2	2	1	1.75
% indifferent[a]					25.75

Note: [a]Percentage of respondents who valued the four alternatives always the same.

Table 3
Paired Kolmogorov-Smirnov equality-of-distributions test for the three selected foods.

	D values		
	5 minutes	10 minutes	20 minutes
Vegetable soup			
10 minutes	9.009**		
20 minutes	9.984**	9.873**	
30 minutes	9.964**	9.334**	9.751**
Pan-fried chicken			
10 minutes	9.022**		
20 minutes	9.803**	9.462**	
30 minutes	9.988**	9.911**	9.050**
Mashed potatoes			
10 minutes	9.990**		
20 minutes	9.993**	9.009**	
30 minutes	9.777**	9.864**	9.234**

Note: ** and * denote significance at the 1% and 5% levels, respectively.

Table 4
Percentage of respondents that expressed zero-WTP and importance of their reasons for this choice.

Food products		Respondents eliciting zero-WTP	Motives			
			The preparation time is too long	The preparation time makes me think that the product does not taste good	The preparation time makes me think that the product is unhealthy	I don't buy precooked or partially processed products
Vegetable soup	5 min	8%	0%	4%	4%	3%
	10 min	4%	1%	2%	2%	2%
	20 min	7%	6%	1%	1%	1%
	30 min	13%	10%	1%	1%	1%
Pan-fried chicken	5 min	8%	0%	4%	3%	2%
	10 min	3%	0%	2%	1%	1%
	20 min	5%	4%	1%	0%	0%
	30 min	9%	9%	1%	1%	0%
Mashed potatoes	5 min	6%	0%	3%	3%	2%
	10 min	4%	2%	1%	1%	1%
	20 min	13%	12%	1%	1%	1%
	30 min	22%	20%	2%	2%	1%

Table 5
Fit measures for latent class regression models with different number of classes
for the three selected foods.

Model	LL	BIC	AIC
Vegetable soup			
2-Class Regression	-4,012	8,098	8,046
3-Class Regression	-1,263	2,640	2,559
4-Class Regression	-712	1,580	1,470
5-Class Regression	-460	1,116	978
Pan-fried chicken			
2-Class Regression	-3,687	7,447	7,396
3-Class Regression	-1,776	3,665	3,586
4-Class Regression	-1,346	2,845	2,739
5-Class Regression	-1,109	2,410	2,277
Mashed potatoes			
2-Class Regression	-3,893	7,861	7,808
3-Class Regression	-949	2,013	1,931
4-Class Regression	-413	983	872
5-Class Regression	936	-1,676	-1,815

Notes: LL = Log-likelihood; BIC=Bayesian Information Criterion; AIC = Akaike's
information criterion.

Table 6
Estimates for latent class regression model with three classes.

	Foodies			Quickies			Indifferent	
	Coef.		z-value	Coef.		z-value	Coef.	z-value
Vegetable soup, N = 867								
5 minutes	-0.65	**	-9.38	0.87	**	40.96	0.00	0.00
10 minutes	-0.30	**	-4.44	0.36	**	17.31	0.00	0.00
20 minutes	0.37	**	5.52	-0.44	**	-21.66	0.00	0.00
30 minutes	0.58	**	8.33	-0.79	**	-38.33	0.00	0.00
Class size	38%			37%			25%	
Pan-fried chicken, N = 740								
5 minutes	-0.64	**	-8.36	0.97	**	34.92	0.00	0.00
10 minutes	-0.01		-0.11	0.36	**	14.25	0.00	0.00
20 minutes	0.24	**	3.40	-0.44	**	-17.71	0.00	0.00
30 minutes	0.41	**	5.40	-0.89	**	-31.71	0.00	0.00
Class size	42%			36%			22%	
Mashed potatoes, N = 897								
5 minutes	-0.51	**	-6.68	0.83	**	41.36	0.00	0.00
10 minutes	0.03		0.44	0.34	**	17.78	0.00	0.00
20 minutes	0.18	**	2.43	-0.42	**	-22.25	0.00	0.00
30 minutes	0.30	**	3.95	-0.75	**	-38.87	0.00	0.00
Class size	33%			41%			26%	

Notes: Intercept omitted. ** and * denote significance at the 1% and 5% levels, respectively.

Table 7
CHAID results: levels of significance of the variables used for profiling.

Variables	LR chi-squared	df	Prob.
Attitude towards convenience foods	8.41	2	0.90
Gender	0.00	0	1.00
Age	13.27	1	0.00
Education	0.00	0	1.00
Country of residence	22.17	1	0.00
Area of residence	8.09	1	0.16
Number of household members	5.80	1	0.06
Presence of children under 12 years of age	0.00	0	1.00

Imagine being in your usual shop to buy a [vegetable soup or fried chicken or mashed potatoes] for a midweek meal. Four products are available and they differ only in preparation time. Assuming that the four products have the same quality, please indicate the maximum price you would be willing to pay for a portion of them. (Please tick one answer for each column.)

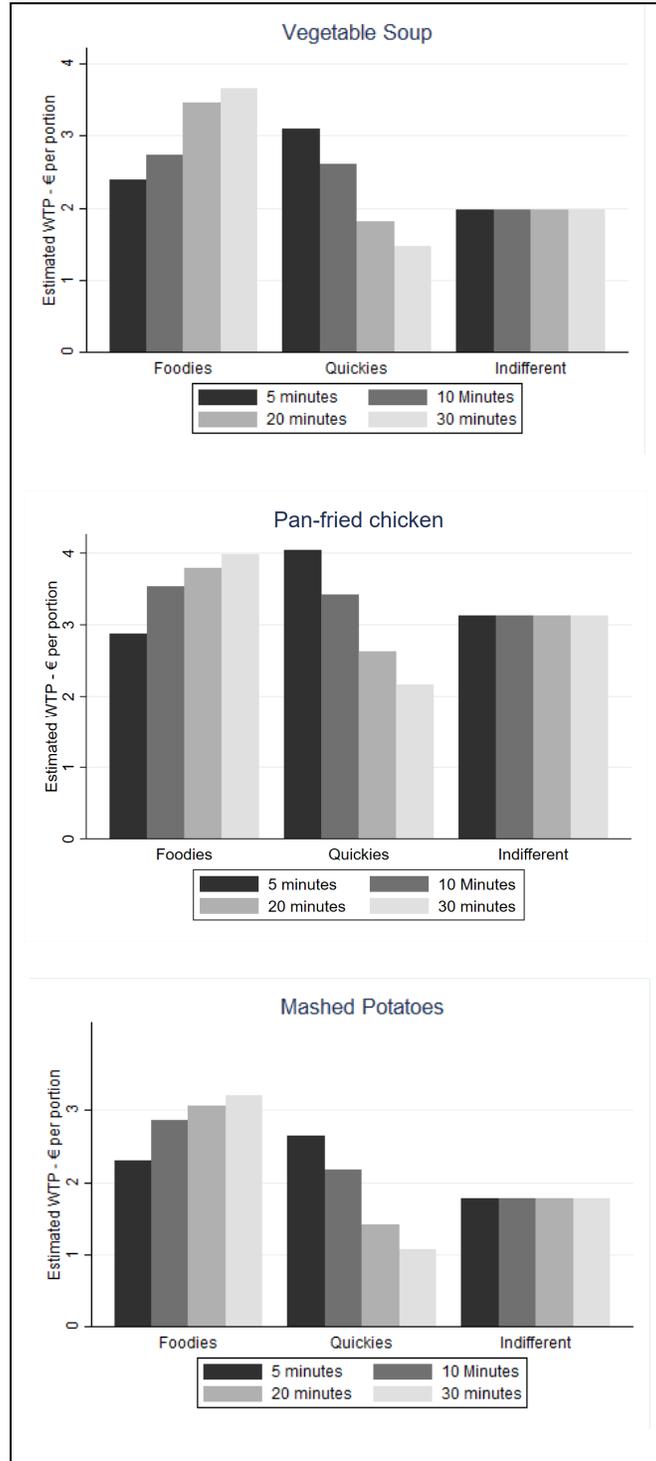| Maximum price per portion (€)	Fried chicken ready in 5 minutes	Fried chicken ready in 10 minutes	Fried chicken ready in 20 minutes	Fried chicken ready in 30 minutes
0	◎	◎	◎	◎
1	◎	◎	◎	◎
2	◎	◎	◎	◎
3	◎	◎	◎	◎
4	◎	◎	◎	◎
5	◎	◎	◎	◎
6	◎	◎	◎	◎
7	◎	◎	◎	◎
8	◎	◎	◎	◎
9	◎	◎	◎	◎
10	◎	◎	◎	◎

Fig. 1. Payment card question.

Fig. 2. Estimated WTP for each preparation time by cluster membership.
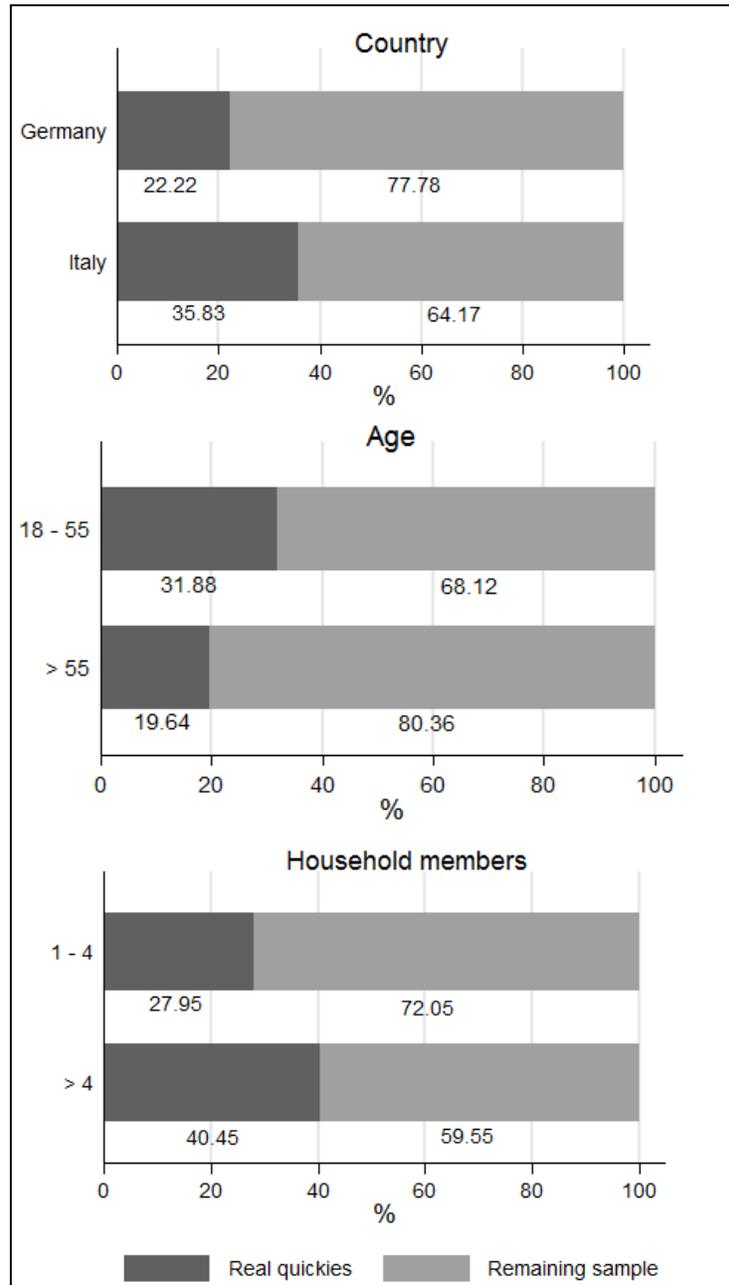
Fig. 3. Comparison between the socio-demographic profile of the 'real quickies' and that of the remaining sample.